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ABSTRACT

This essay discusses the prospect of utilizing well-confirmed knowledge to enhance the chances for the schooling success of every student in today's elementary schools through secondary schools. The paper begins with a brief discussion of the state of practice. The balance of the paper illustrates an efficient way to apply research and practical wisdom toward creating and implementing programs for improving educational equality. This discussion centers on findings from a recently completed synthesis of the research base and an analysis of consensus from the field on variables that are important to learning, which led to the development of a framework for systematic description of program features and assessment of implementation requirements and outcomes of approaches and practices. This framework, the Consensus Marker-Outcome Variable System (CMOVS), incorporates variables that are considered by professionals to be "important" and "alterable" so as to improve chances for students' learning success. A major design goal of the CMOVS is the development of a common language that can be used to improve communication about program features and implementation requirements among educational professionals. A section describes using the format for making program decisions, using it to calculate indices, and other implications. Appended are a master list of variables and definitions and 58 references. (JB)

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ACHIEVING SCHOOLING SUCCESS FOR ALL STUDENTS

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Achieving Schooling Success for All Students

Margaret C. Wang

Temple University Center for Research
in Human Development and Education
and
National Center on Education in the Inner Cities

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From K. A. Haring, D. L. Lovett, & N. G. Haring (Eds.): Integrated life cycle services for persons with disabilities: A theoretical and empirical perspective. Copyright 1992 by Springer-Verlag, Heidelberg, Germany. Permission granted by the publisher.

Abstract

The overall purpose of this chapter is to discuss the prospect of utilizing well-confirmed knowledge to enhance the chances for the schooling success of every student in today's schools. The chapter begins with a brief discussion of the state of practice and is followed by an illustration of the most efficient ways to apply research and practical wisdom toward creating and implementing programs designed to provide schooling success for all students.

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Achieving Schooling Success for All Students

MARGARET C. WANG

Building an educated citizenry has been a persistent goal of educational reform efforts in this country. Indeed, by stressing the value of education and seeing it as a way of achieving social and economic equity, we have made great progress in ensuring equal opportunity to a free public education for all children in this country. We have increased the percentage of the population in school; the diversity in student characteristics (with respect to the learning needs of the students, as well as the ethnic, cultural, and socioeconomic backgrounds of their families); and the kinds of educational programs we offer.

However, these accomplishments fall far short of our vision of schooling success for every child. The statistics clearly point to a trend of increasing numbers of students who drop out of school or graduate without attaining the basic literacy skills necessary to function effectively in an increasingly technological world. Based on the projected demographic changes in student populations (cf. Hodges et al., 1980), the failure to provide for the schooling success of all students in our educational system will become even more alarming in the coming decade. A major school improvement goal of the 1990s is for the schools to achieve schooling success of all students with diverse learning characteristics and educational and related service support needs. Educational equity in this context is defined in terms of learning outcomes for every student—a conception of educational equity that goes beyond the current practice of only providing access to educational opportunities.

Achieving the goal of educational equity in the context of outcomes will require a major conceptual shift in the way we think about differences among students, how we view the purpose of elementary and secondary education, and the way we choose to organize schools. If schooling success is recognized as possible for everyone through effective intervention and related service support, then a major task of the schools is clearly the creation of learning environments that uphold a standard of educational equity in terms of schooling outcomes for all students. The central focus in efforts to improve educational equity, therefore, is the

identification of practices that deny equal access to schooling success, as well as practices that promote it.

The overall purpose of this chapter is to discuss the prospect of utilizing well-confirmed knowledge to enhance the chances for the schooling success of every student in today's schools. The chapter begins with a brief discussion of the state of practice. It is followed by an illustration of how to apply research and practical wisdom toward the design and implementation of innovative practices aiming to improve the schools' capabilities to achieve equity in schooling outcomes for all students, including and especially those requiring greater-than-usual educational support—students whose learning success depends on educational interventions that are of high quality and effectiveness.

The State of the Practice

Advances in theory and research during the past two decades have provided substantial conceptual changes in the type of information available on individual students and their learning. Among the significant developments is an increased recognition that certain personal and learning characteristics are alterable (Bloom, 1976). Some prime examples of variables that are no longer considered to be static are family characteristics, such as parental expectations and family involvement (Walberg, 1984); cognition and processes of learning (Chipman, Segal, & Glaser, 1985; Segal, Chipman, & Glaser, 1985); and student motivation and the roles students play in their own learning (Wang & Palincsar, 1989; Zimmerman, 1986).

The recognition of the alterability of these learner characteristics leads researchers to study ways to modify the psychological processes and cognitive operations used by individual students, as well as to modify learning environments and instructional strategies to accommodate learner differences (Wang & Walberg, 1985). It is the responsibility of the schools to structure educational programs to account for these alterable differences and ensure educational outcomes for every student while still maintaining the standard of mastering a common curriculum of elementary and secondary education in this country (Fenstermacher & Goodlad, 1983).

Schools' Response to Student Diversity

Despite the advances in theory and research on individual differences in learning and effective teaching, the knowledge base has had very little impact on how schools respond to these issues in practice. For example, although we provide opportunities for students requiring greater-than-usual educational support through well-intentioned "special" programs

(e.g., special education, Chapter 1, and other compensatory and remedial programs), implementation of these programs for the most part has not measured up to the outcome standards that are considered to be critical indicators of educational equity (cf. Brandt, 1989). Many students have difficulty in achieving learning success, and they need better help than they are now receiving.

There are serious problems in how individual differences are characterized and in the way information is generated and used for instructional decision making. In current practice, diversity in processes of learning and instructional support needs among students is typically handled by classifying or labeling the perceived differences in terms of macro-level characteristics (i.e., children at risk, low-achieving children from poor families, children with learning disabilities, or socially/emotionally disturbed children). Then, the "identified" or "certified" students with these spuriously defined labels are placed homogeneously in narrowly framed categorical or special education programs.

Although well intentioned, implementation of these programs has become a major problem source in schools. In too many cases, this practice of classifying students for instruction based on certain perceived differences involves the delivery of radically altered and not always appropriate curriculum to selected students. There is a tendency to seriously neglect fundamental content (Oakes, 1985), and there is substantial evidence to suggest that students may actually receive *less* instruction when schools provide them with specially designed programs to meet their particular learning needs (Allington & Johnston, 1986; Haynes & Jenkins, 1986).

Current approaches to provide for student diversity often contribute to children's learning problems. One such problem is characterized by the "Matthew Effect" (Stanovich, 1984). Students who show limited progress in early phases of instruction in basic subjects, such as reading, tend to show progressive retardation over succeeding years. It has been estimated, for example, that the lowest achieving students in the middle elementary grades may be reading only one tenth as many words per day in school as students in a highly skilled reading group (Reynolds, 1989). The Matthew Effect is also reflected in teacher expectancy research. For example, teachers tend to give less feedback to students with special learning needs, calling on them less often or waiting less time for them to answer (Cooper, 1983). Such differences in educational practices that work to the disadvantage of selected groups of students have contributed to, rather than ameliorated, the problem of school failure among an alarming number of students.

Providing educational opportunities without ensuring educational outcomes only perpetuates inequity in a more subtle form. Schools cannot address the equity issue to simply provide educational opportunities for

students through establishing special programs. Educational outcomes must apply for every student. The practice of compensating for learner differences by making school success easier for selected students through differential standards cannot be accepted as an indicator of educational equity.

Prospects for Improvement

If all students are to successfully complete a "basic" education or common curriculum, today's schools must undergo major conceptual and restructural changes. Some students require more time and extraordinary instructional support to achieve mastery of the common curriculum, and others require less time and little direct instruction. Thus, achieving equity in educational outcomes requires a shift from a fixed to a flexible system for effective implementation of the common curriculum.

Findings from recent research, along with the practical wisdom culled from implementing innovative programs in schools, significantly contribute to our current understanding of what constitutes effective teaching and how student learning can be enhanced. These findings suggest alternate approaches to delivering instruction and related service supports that are substantially superior to widespread traditional practices (cf. U.S. Department of Education, 1986; 1987; Wang, Reynolds, & Walberg, 1987, 1988; Wittrock, 1986). Based on the wealth of findings from the past two decades of "effectiveness" research, many varieties of experimental programs can be envisioned to enhance the capabilities of schools to more effectively address student diversity and equity in student learning outcomes.

However, although a number of innovative programs are in operation and can be replicated or extended, there is very little evidence of systematic application of advances from the past two decades of research on effective teaching and school effectiveness. If widespread systematic implementation of knowledge from the past decade of research and innovative program development efforts is to occur in schools with a high level of precision and credibility, significant efforts need to be made in building a knowledge base on the "how to" aspects of program implementation in school settings.

We need to build a data base on implementation requirements of a variety of demonstrably effective alternative programs/practices, as well as information delivery systems in forms that are usable by school personnel. Local schools and related social service agencies are presently faced with two demanding tasks: first, surmounting the difficulty of obtaining information on the design, implementation requirements, and efficacy of innovative programs/practices; and second, specifying criteria for making informed decisions on the feasibility and the site-specific

compatibility of program(s)/practices that will best serve the program development and implementation objectives of a particular school district/school.

The need for systematic information that addresses program design and implementation-related concerns has been widely expressed by school personnel and policymakers. Presently, there is little available information (in forms that are usable) to assist local schools/school districts in selecting programs/practices for meeting their specific program improvement and implementation needs. Systematically organized information is needed on what constitutes school effectiveness and the conditions that influence effective implementation. Information is also needed on critical program features, implementation and training requirements, program cost, program delivery systems, program impacts, and a host of other relevant factors critical to enable schools to make informed choices—to identify demonstrably effective programs/practices for adoption or adaptation that are aligned with their respective program improvement goals, resources, and needs.

A Framework for Building an Information Base for Making Programming Decisions

Research on effective teaching and implementation of innovative school improvement programs has identified a large number of variables that are important to learning (cf. Wittrock, 1986; Wang, Reynolds, & Walberg, 1987–1989; Williams, Richmond, & Mason, 1986). However, researchers, policymakers, and practitioners find the research base on the multiplicity of learning influences perplexing and are in need of clearer guidance concerning the relative importance of the particular variables most likely to maximize school learning. To address this need, the following section provides an illustration of how to draw upon well-confirmed knowledge on effective practices to make informed decisions on educational programming.

Based on findings from a recently completed synthesis of the research base and an analysis of the consensus from the field on variables that are important to learning (Temple University Center for Research in Human Development and Education, 1989), a framework was developed for systematic description of program features and assessment of implementation requirements and outcomes of approaches and practices. This framework, the Consensus Marker-Outcome Variable System (CMOVS), incorporates variables that are considered by professionals to be "important" and "alterable" so as to improve chances for students' learning success. A major design goal of the CMOVS is the development of a common language that can be used to improve communication about program features and implementation requirements among educational

professionals (i.e., principals, regular education teachers, special education teachers, school psychologists, counselors, subject matter specialists, etc.).

The Development of the CMOVS

There have been several notable theoretical developments attempting to synthesize and explicate the interactive effects of the many variables identified by research as related to school learning. The 1960s and 1970s were marked by the introduction of several important models of learning, including those of Carroll (1963), Bruner (1966), Bloom (1976), Harnischfeger and Wiley (1976), Glaser (1975), and Bennett (1978). All of these models recognize the primary importance of student ability and include constructs such as aptitude, prior knowledge, and other learning and personal characteristics of the individual students. Most of them also address the importance of motivation by employing such constructs as perseverance, self-concept of the learner, and attitude toward school subject matter. This acknowledgement of individual difference variables among learners stood in contrast to more narrow psychological studies of influences on learning, which generally treated individual differences as a source of error and focused on instructional-treatment variables (Hilgard, 1964).

Although these models brought some refinement in the ways in which individual difference variables and instructional variables were defined and the ways in which they were related to one another, the primary contributions of more recent models have been in extending the range of variables considered. Findings from a study by Haertel, Walberg, and Weinstein (1983), for example, showed that previous models of school learning neglect extramural and social-psychological influences. The evolution of models of school learning was further advanced with the introduction of models of adaptive instruction (Glaser, 1975; Wang & Walberg, 1985). School-based implementation of models of adaptive instruction are designed to help schools create learning environments that maximize each student's opportunities for success in school. These models pay particular attention to new variables associated with instructional delivery systems, program design, and implementation.

Another contribution to contemporary models of school learning came from sociologists concerned with the identification of effective schools. Ronald Edmonds (1979a, 1979b, 1979c) is most strongly associated with this identification of variables associated with exceptionally effective schools, especially for the urban poor. Significant contributions to effective school models were also made by Brookover (1979); Brookover and Lezotte (1977); and Rutter, Maughan, Mortimore, and Ouston (1979). Illustrations of the types of variables characterizing effective schools include degree of curriculum articulation and organization, schoolwide

staff development, parental involvement and support, schoolwide recognition of academic success, maximized learning time, district support, clear goals and high expectations, orderly and disciplined school environment, and leadership of the principal characterized by attention to quality of instruction (Purkey & Smith, 1983).

There is a substantial research base on what makes learning more productive. Indeed, a pressing task for policymakers and practitioners interested in improving teaching and learning in school is delineation of variables most likely to maximize school learning. The CMOVS which will be discussed in this section, aims to provide a systematic framework for addressing the variables that are important to consider in designing educational programs for achieving educational equity in student outcomes.

The CMOVS was developed based on a synthesis of professional literature and expert opinions to answer the following questions: What aspects of school and instruction enhance student learning? What kinds of social relationships are important to enhance student learning in regular classroom settings? What learner characteristics are important and alterable in improving the learning of students with special needs? Answers to these questions were then analyzed and summarized as the basis for the development of the CMOVS. (For a detailed discussion of the development and the research base of the CMOVS, see Wang, Haertel, & Walberg, 1990).

Briefly, the development of the CMOVS involved a detailed reading of the literature to make a "first approximation" list of variables important to learning using a conceptual model of influential variables (Wang, 1986) shown in Figure 5.1. The model is a schematic representation of the multidimensional variables and hypothesized interactive effects on classroom learning (Wang, 1986). This interactive view of school learning is supported by findings in the contemporary literature on cognitive-social-psychological research on learning, research on effective teaching and school effectiveness, and studies of school change from a sociological perspective.

For example, distinct patterns of interaction among program features, student and teacher behaviors, and student outcomes have been noted in studies of the differential effects among instructional approaches (e.g., Berliner, 1983; Hedges, Giaconia, & Gage, 1981; Walberg, 1984; Wang & Walberg, 1986; Webb, 1982a; Webb, 1982b; Webb, 1983c). Findings from a study of program implementation and effects recently completed by Wang and Walberg (1986) suggest that programs that feature student choice, task flexibility, teacher monitoring, peer tutoring, student-initiated requests for teacher help, a variety of curriculum materials, and task-specific instructions are associated with student self-management, personal interactions between students and teachers, student work in small groups, and substantive interactions between teachers and students.

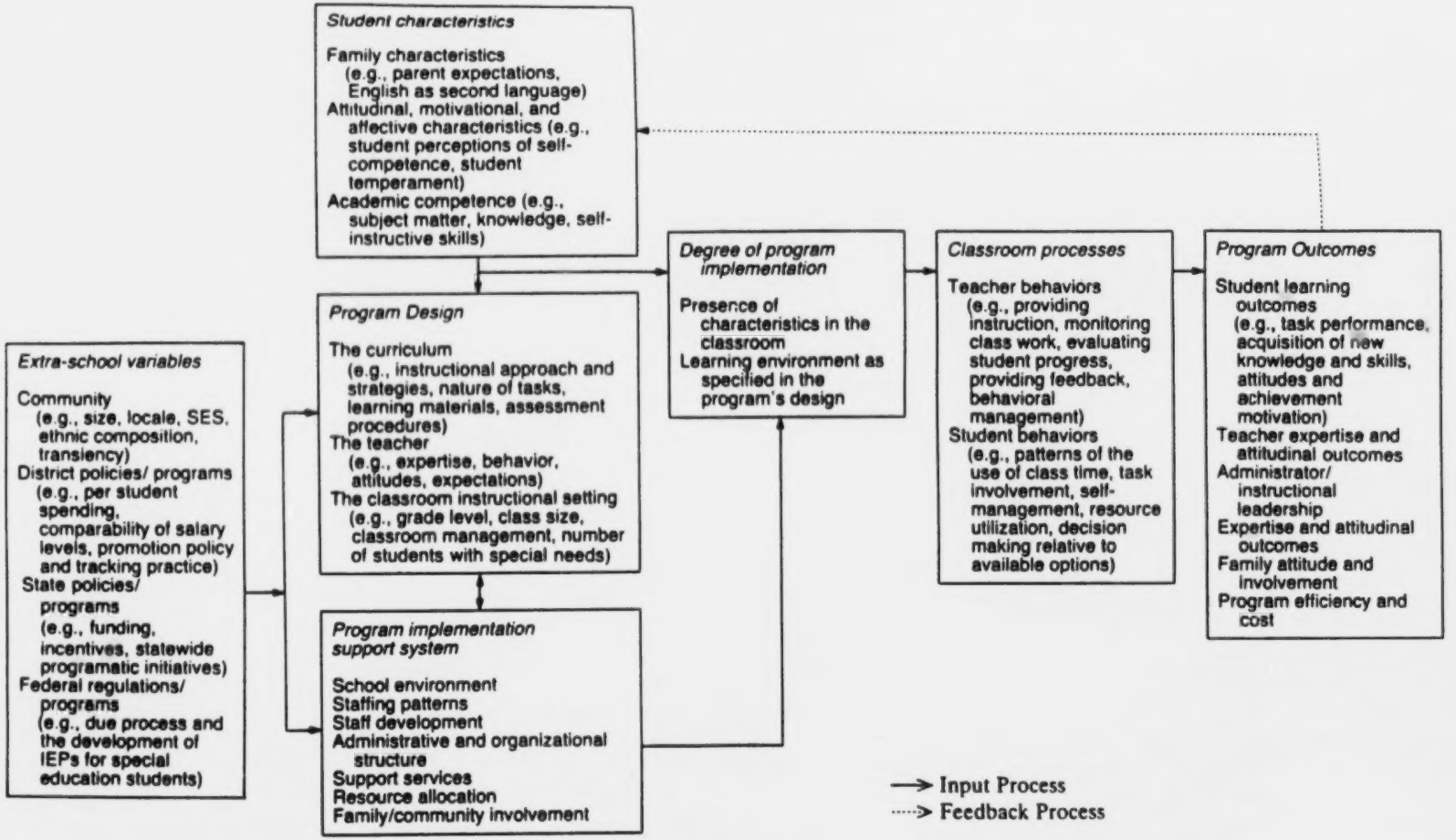
Student characteristics
Family characteristics (e.g., parent expectations, English as second language)
Attitudinal, motivational, and affective characteristics (e.g., student perceptions of self-competence, student temperament)
Academic competence (e.g., subject matter, knowledge, self-instructive skills)
Extra-school variables
Community (e.g., size, locale, SES, ethnic composition, transiency)
District policies/ programs (e.g., per student spending, comparability of salary levels, promotion policy and tracking practice)
State policies/ programs (e.g., funding, incentives, statewide programatic initiatives)
Federal regulations/ programs (e.g., due process and the development of IEPs for special education students)
Program Design
The curriculum (e.g., instructional approach and strategies, nature of tasks, learning materials, assessment procedures)
The teacher (e.g., expertise, behavior, attitudes, expectations)
The classroom instructional setting (e.g., grade level, class size, classroom management, number of students with special needs)
Program implementation support system
School environment
Staffing patterns
Staff development
Administrative and organizational structure
Support services
Resource allocation
Family/community involvement
Degree of program implementation
Presence of characteristics in the classroom
Learning environment as specified in the program's design
Classroom processes
Teacher behaviors (e.g., providing instruction, monitoring class work, evaluating student progress, providing feedback, behavioral management)
Student behaviors (e.g., patterns of the use of class time, task involvement, self-management, resource utilization, decision making relative to available options)
Program Outcomes
Student learning outcomes (e.g., task performance, acquisition of new knowledge and skills, attitudes and achievement motivation)
Teacher expertise and attitudinal outcomes
Administrator/ instructional leadership
Expertise and attitudinal outcomes
Family attitude and involvement
Program efficiency and cost
Input Process
Feedback Process

FIGURE 5.1. Conceptual model of variables that are important to learning.

Note: Variables listed are intended to be illustrative only. They are not intended to reflect a comprehensive analysis
From Wang et al. (1990). Reprinted with permission of the Helen Dwight Reid Educational Foundation. Published by Heldref Publications, 4000 Albemarle St., N.W., Washington, D.C. 20016. Copyright© 1990.

Furthermore, these particular patterns of classroom processes were found to be positively associated with instructional approaches that recognize an active role for students in mediating their own learning, and negatively associated with program features such as whole-class and teacher-directed instruction.

Similarly, in their explication of the essential elements in the acquisition of information and the process of accessing and using knowledge, Brown, Day, and Jones (1983) point to the "readiness" of the field for moving from learning models that address learner knowledge (i.e., the learning process and learning tasks in relative isolation) toward a model that addresses the more complex interactive processes of learning.

The validity of using the person–environment–process–product paradigm shown in Figure 5.1 is further supported by recent developments in research concerned with social psychological processes and attitudes (Bossert, 1979; Doyle, 1977; Gordon, 1983; Madden & Slavin, 1982; Marshall & Weinstein, 1984). Classroom events (e.g., teacher behaviors, peer interactions), for example, tend to have different meanings for different students, and these meanings, in turn, influence students' behavior and their learning outcomes.

Students' perceptions of classroom environments consistently have been found to account for variation in learning outcomes beyond the variation that can be attributed to ability (Haertel, Walberg, & Haertel, 1981). Weinstein (1984) found that the evaluative cues used by students vary as a function of the structure and climate of the classroom. Similarly, in a study designed to investigate differences in the learning processes of high- and low-achieving students, DeStefano, Wang, and Gordon (1984) found that students' personal characteristics, such as temperament, knowledge, and motivation, interacted with learning conditions, such as the physical and organizational structure of the classroom, to elicit certain learning behaviors (e.g., time on-task, energy development, task involvement, autonomy, decision making, resource utilization).

This focus on instruction and learning as a dynamic process contrasts sharply with the more traditional approach of viewing learner characteristics as static. Research on learning and effective teaching clearly suggests a trend of moving away from educational models that focus on teacher instruction toward those that focus on classroom learning as a complex interactive process and on instruction that centers on learner knowledge, the learning process, teacher expertise, and the classroom learning environment (Wang & Walberg, 1986; Segal, Chipman, & Glaser, 1985). There is a growing interest in the dynamic nature of the instructional-learning process, the conditions under which it occurs, its role in mediating distinct types of learning, and its effect on improving performance (Corno & Snow, 1986; Wang & Palinscar, 1989).

Based on the conceptual model of variables important to learning, shown in Figure 5.1, more than 228 variables were identified from the

literature as important to school learning. A list of these variables is presented in the appendix to this chapter (Wang, Haertel, & Walberg, 1990). The literature review focused on a synthesis of authoritative reviews and handbook chapters, especially those sponsored by the American Educational Research Association and other organizations, and selected additional syntheses in government documents and other sources. A preliminary list of sources was reviewed by the Scientific Advisory Panel and revised following the panel's recommendations. Following this review, specific sources were chosen. They included 86 chapters from special reviews such as the American Educational Research Association's *Handbook of Research on Teaching* (Wittrock, 1986); 45 handbook chapters from the *Handbook of Special Education: Research and Practice* (Wang, Reynolds, & Walberg, 1987–1989); 11 major review articles from the past decade or more of the *Review of Research in Education*, the *Annual Review of Psychology*, and the *Annual Review of Sociology*; 18 book chapters, such as Brophy's chapter in *Designs for Compensatory Education* (William.., Richmond, & Mason, 1986); and a number of journal articles chosen to assure coverage of all of the areas addressed in the conceptual model (Figure 5.1). (For a complete bibliography of the literature included in the review, see Wang, Haertel, & Walberg, 1990.)

Using the CMOVS for Making Programming Decisions

In this section an illustration is provided of the use of the CMOVS as a guiding framework for analyzing and describing program features and, perhaps more important, for making systematic programming decisions that facilitate and improve articulation and coordinate innovative efforts by special and regular education professionals to improve instructional effectiveness in student learning. The CMOVS can be used as a systematic guideline for making informed decisions on design, identification, and selection of innovative practices for adoption and adaptation, and for describing and documenting program implementation and outcomes.

Table 5.1 provides an illustration of how the CMOVS can be used to analyze the critical design features and outcomes of extant programs or discuss features of an innovative program being implemented or considered for implementation by a group of teachers, a school, or school district. Column 1 of Table 5.1 shows a list of 30 categories of variables included in the CMOVS that are considered important to learning, as well as the anticipated program outcomes. The second column shows the average weightings of each variable category based on the consensus from the field (Temple University Center for Research in Human Development and Education, 1989). A rating of 3 for a given variable category (as listed in column 2 of Table 5.1) means that, based on the consensus from the field, that particular variable category received a mean rating of 3,

TABLE 5.1 Decision-making framework: A preliminary analysis of the programmatic emphases of selected programs.

Variable categories	Variable weighting (based on consensus from the field)*	Program A: A peer collaboration approach	Program B: A teacher collaboration approach	Program C: A classroom approach	Program D: A curriculum modification approach	Program E: A comprehensive, integrated, education and related service delivery approach
I. Variables considered important to learning						
A. State and district variables						
1. District level demographics and marker variables	(2)		x	x		x
2. State level policy variables	(2)		x			x
B. Out of school contextual variables						
1. Community variables	(2)					x
2. Peer Group variables	(2)	x				x
3. Home environment and parental support variables	(3)				x	x
4. Student use of out of school time variables	(2)	x		x		x
C. School level variables						
1. Demographic and marker variables	(1)					x
2. Teacher/administrdtor decision making variables	(3)		x	x		x
3. School culture variables (ethos conducive to teaching and learning)	(3)	x	x	x		x
4. Schoolwide policy and organizational variables	(2)		x	x		x
5. Accessibility variables	(2)			x		x
6. Parental involvement policy variables	(2)					x

D. Student variables						
1. Demographic and marker variables	(1)			x		x
2. History of educational placements	(2)			x	x	x
3. Social and behavioral variables	(3)	x		x	x	x
4. Motivational and affective variables	(3)	x	x	x	x	x
5. Cognitive variables	(2)	x	x	x	x	x
6. Metacognitive variables	(3)	x	x	x	x	x
7. Psychomotor variables	(2)	x	x	x	x	x
E. Program design variables						
1. Demographic and marker variables	(2)			x		x
2. Curriculum and instructional variables	(2)	x	x	x		x
3. Curriculum design variables	(2)	x		x		x
F. Implementation, classroom instruction, and climate variables						
1. Classroom implementation support variables	(2)			x		x
2. Classroom instructional variables	(3)	x	x	x	x	x
3. Quantity of instruction variables	(2)			x	x	x
4. Classroom assessment variables	(2)			x	x	x
5. Classroom management variables	(3)	x		x		x
6. Student and teacher interactions: social variables	(3)	x		x		x
7. Student and teacher interactions: academic variables	(2)	x		x		x
8. Classroom climate variables	(3)	x		x		x
II. Expected program outcomes						
A. Student learning outcomes		x	x	x	x	x
B. Teacher expertise and attitudes		x	x	x	x	x
C. Administrator/instructional leader expertise and attitudes			x	x		x
D. Family expectation-attitudes						x
E. Program cost effectiveness		x	x	x	x	x

* Abstracted from Temple University Center for Research in Human Development and Education (1989). "Effective Educational Practices: A Consensus on Learning."

indicating high importance (on a 3-point scale) in arranging learning environments. A rating of 1 for a given variable category, on the other hand, indicates that the particular variable category was of low importance based on the consensus from the field.

The Xs listed under each program column indicate that the particular variables were explicitly considered in the design of a specific program. For example, for Program B, a hypothetical program based on a teacher collaboration approach, variable categories that were explicitly considered under the heading of State and District Variables include district level demographics and marker variables and state level policy variables; while variable categories under the heading of School Level Variables include teacher/administrator decision making variables, school culture variables, and schoolwide policy and organizational variables. It is important to note, the listing of program approaches and the specific programs under each approach are hypothetical, and they are included here for illustrative purposes.

Regular and special educators, for example, can work together using the CMOVS to identify, describe, and evaluate the program features that best meet their implementation needs and the needs of their students. The CMOVS, in this context, serves as a systematic mechanism that enhances communication and implementation of demonstrably effective research-based practices. One major expected outcome of utilizing the CMOVS is improved communication and coordination of work among regular educators and specialists through a common knowledge base on effective practices.

Calculating Indices Based on the CMOVS

Several simple indices can be generated to provide a data base for identifying program development needs and/or selecting a particular approach or practice for adoption or adaptation in order to meet the improvement needs of a particular school.

One such index is the Program Effectiveness Index. Using the variable weightings based on findings from the consensus from the field (Temple University Center for Research in Human Development and Education, 1989), as well as information on features explicitly considered in the design of the various programs as shown in Table 5.1, potential adopters of specific programs or practices can develop an effectiveness index that serves as an indication of site-specific needs.

The first step in developing a Program Effectiveness Index is to calculate the "importance rating" by the user (e.g., potential adopter of the program/approach). This is done by asking the users to rate the importance of the CMOVS variable categories according to their own judgments about the program improvement needs of their respective situations, using a 3-point scale. A rating of 3 indicates that a particular variable

category is considered of high importance in terms of the user's site-specific needs; a rating of 2 indicates that a particular variable category is of moderate importance; and a rating of 1 indicates that a particular variable category is of low importance. The ratings may be based on a variety of user-specific information (e.g., their own experiences, current programs implemented in their respective schools, knowledge on a particular set of research findings, philosophical alliances or differences on a specific instructional approach, the importance of the variables from their own perspective or those of particular stakeholder groups).

In essence, the importance ratings represent the users' ratings of each variable category included in the CMOVS based on multiple information sources that suggest the relative importance of selected variable categories according to their site-specific perspectives. The quantitative index derived from the potential users' importance ratings will enable them to make decisions on the extent to which the various educational approaches and program specific practices of the various extant programs being considered meet the program improvement and implementation support needs of their respective schools/school districts.

For example, if a particular hypothetical user were interested in adopting either Program A, which uses the peer collaboration approach, or Program B, which uses a teacher collaboration approach, he or she can use the Program Effectiveness Index for each of the programs being considered as one of the criteria for making selection decisions.

Table 5.2 is an example of how a hypothetical user calculates a Program Effectiveness Index based on the CMOVS. The second column of Table 5.2 shows the variable weighting scores (based on findings from the Temple University Center for Research in Human Development and Education, 1989 study on the consensus from the field for variables considered important to learning) of each of the variable categories included in the CMOVS. The hypothetical user's importance ratings of each of the variables included in the CMOVS are listed in Column 3 of Table 5.2. The number listed in the last row of column 3 is 79, which represents the total possible importance rating. The Program Effectiveness Index is calculated based on the user's own assessment of the relative importance of the variables included in the CMOVS (column 3), the variable weighting of the variables based on the consensus from the field (column 2), and whether a given variable in the CMOVS is emphasized in the design of a given program (columns 4 and 6 for Programs A and B, respectively).

Thus, the Program Effectiveness Index is the sum of the Effectiveness Ratings (calculated by using the importance rating multiplied by the variable weighting score for each of the variables considered in a given program design). For example, the effectiveness rating for variable category B.2 (peer group variables) for Program A is 4. The Program Effectiveness Index for variable category B.2 is derived by multiplying a

TABLE 5.2 An illustration of using the decision-making framework to calculate effectiveness index.

Variable categories	Variable weighting (based on consensus from the field)*	Importance rating by the potential user	Program A: A peer collaboration approach		Program B: A teacher collaboration approach	
			Variables emphasized in program design	Effectiveness rating**	Variables emphasized in program design	Effectiveness rating**
I. Variables considered important to learning						
A. State and district variables						
1. District level demographics and marker variables	(2)	1	0	0	x	2
2. State level policy variables	(2)	2	0	0	x	4
B. Out of school contextual variables						
1. Community variables	(2)	1		0	0	0
2. Peer Group variables	(2)	2	x	4	0	0
3. Home environment and parental support variables	(3)	3		0	0	0
4. Student use of out of school time variables	(2)	1	x	2	0	0
C. School level variables						
1. Demographic and marker variables	(1)	2	0	0	0	0
2. Teacher/administrator decision making variables	(3)	3	0	0	x	9
3. School culture variables (ethos conducive to teaching and learning)	(3)	3	0	0	0	0
4. Schoolwide policy and organizational variables	(2)	3	x	6	x	6
5. Accessibility variables	(2)	3	0	0	x	6
6. Parental involvement policy variables	(2)	3	0	0	0	0

D. Student variables						
1. Demographic and marker variables	(1)	1	0	0	0	0
2. History of educational placements	(2)	1	0	0	0	0
3. Social and behavioral variables	(3)	3	x	9	0	0
4. Motivational and affective variables	(2)	2	x	4	x	4
5. Cognitive variables	(2)	1	x	3	x	3
6. Metacognitive variables	(3)	1	x	3	x	3
7. Psychomotor variables	(2)	1	x	2	x	2
E. Program design variables						
1. Demographic and marker variables	(2)	2	0	0	0	0
2. Curriculum and instructional variables	(2)	2	x	4	x	4
3. Curriculum design variables	(2)	2	x	4	0	0
F. Implementation, classroom instruction, and climate variables						
1. Classroom implementation support variables	(2)	3	0	0	0	0
2. Classroom instructional variables	(3)	3	x	9	0	0
3. Quantity of instruction variables	(2)	3	0	0	x	6
4. Classroom assessment variables	(2)	3	0	0	0	0
5. Classroom management variables	(3)	3	x	9	0	0
6. Student and teacher interactions: social variables	(3)	3	x	9	0	0
7. Student and teacher interactions: academic variables	(2)	3	x	6	0	0
8. Classroom climate variables	(3)	3	x	9	0	0
II. Expected program outcomes						
A. Student learning outcomes		3	x	3	x	3
B. Teacher expertise and attitudes		3	x	3	x	3
C. Administrator/instructional leader expertise and attitudes		2	0	0	x	0
D. Family expectation-attitudes		2	0	0	0	0
E. Program cost effectiveness		2	x	2	x	2
Program effectiveness index		79		91		57

Note: * Importance rating scale: 3 (high importance); 2 (moderate importance); 1 (low importance).

** Effectiveness rating: variable weighting × importance rating for variables emphasized in a given program.

variable weighting of 2 by an importance rating of 2 × 1 (1 indicates that this variable is emphasized in the design of Program A, as indicated by an X; a 0 is used for variable categories that are not emphasized in the design of the program).

Columns 5 and 7 list the effectiveness ratings for each variable category in Program A and Program B. The Program Effectiveness Index for meeting the site-specific improvement needs for Program A and Program B are shown in the last row of columns 5 and 7, respectively. Based on the Program Effectiveness Indices (shown in Table 5.2), without considering other factors, Program A (with a score of 91) seems to match the particular hypothetical user's program improvement needs better than Program B (with a score of 57).

The Broader Implications for the Use of the CMOVS

Although the foregoing discussion emphasizes the application of the CMOVS by potential users (decision makers) of educational programs, it may also prove useful to curriculum designers and developers of innovative programs. The list of variables included in the CMOVS can serve as a checklist to determine which variables are critical to consider in program development and school implementation of innovative programs. The checklist ensures that the program design incorporates features that research suggests are important to learning. Thus, the CMOVS can provide a guiding framework for specific variables to be considered in program development and implementation in schools.

If all programmatic factors were equal, it could be anticipated that the fully implemented programs that included more significant variables (features) would improve learning the most. In actual practice, however, all the factors involved are unlikely to be equal. Programs with extensive features are likely to be more costly to implement and manage. Therefore, both program developers and users need to carefully analyze the site-specific constraints and needs and weigh the trade-offs between cost and effectiveness in identifying priorities and in making programmatic decisions.

Discussion

This chapter provides an illustration of the use of well-confirmed knowledge on effective practices to improve a school's capability to improve student learning. School implementation of innovative programs that work, together with the research base on effective programs and practices (cf. Wittrock, 1986; Wang & Walberg, 1985; Graden, Zins, & Curtis, 1988), has yielded a rich knowledge base regarding how schools can

implement highly complex and sophisticated instructional procedures to meet the learning needs of their diverse student populations.

A premise underlying the concept and practice of educational equity is that schooling success can be nurtured through provision of effective educational intervention (i.e., incorporation of advances in theories and research on demonstrably effective practice and practical wisdom on school implementations of programs that aim to provide for the learning success of all students, including those with special learning needs). Rather than attempting to identify a general underlying deficit in students requiring greater-than-usual instructional support, effective practices are adaptively implemented to ensure equity in student learning outcomes. In the context of the CMOVS discussed in this chapter, for example, provision of equal opportunity for educational success is characterized in terms of the use of school time, the quality of instruction, the content of the instruction, and instructional grouping practices.

A useful application of the CMOVS is identification and evaluation of innovative programs that aim at achieving educational excellence for all students with a high level of precision and credibility. If widespread implementation of innovative programs/practices is to occur, information is needed to further the understanding and specification of what constitutes effectiveness, the conditions that influence effectiveness, and the features of cost-effective alternative programs and practices.

There is no doubt that we fail to provide for the schooling success of many students in our schools today. Little understood, however, is the fact that many schools faced with the challenge of achieving educational equity have adopted new pilot programs, refocused teacher training, engaged in school reform, and implemented many other interventions in efforts to do better. Many national, state, and local school improvement efforts have energized their most creative people to find ways to effectively provide for the diverse learning needs of every child in our schools. Among the examples of federal initiative include the national Head Start program and the national Follow Through program designed to improve schooling outcomes of students from economically disadvantaged homes. These programs were initiated in the late 1960s as part of the federal government's War on Poverty program, the Chapter 1 Program development effort to improve basic skills of students who have not achieved well and are from economically disadvantaged homes, and the recently implemented Regular Education Initiative (REI) designed to improve coordination and articulation of the work of special and regular educators to improve learning outcomes of students with special needs (Will, 1986). Such efforts have led to the implementation of innovative school programs to enhance instruction and learning that require major rethinking and restructuring—not an easy task for schools to accomplish (cf. Williams et al., 1986; Wang, Reynolds, & Walberg, 1987–1989).

In many cases the innovations are working, albeit for the small group of targeted children who participate in the new programs (Dawson, 1987; U.S. Department of Education, 1987). Now, the challenge for the 1990s is to put innovations that work in place everywhere, for all students. Dropping the poorly motivated or difficult-to-teach students, or segregating them in programs that make few demands and offer few opportunities to succeed in school learning, is not an option. There is not a lack of ideas about what to do to improve instruction. What is glaringly lacking is the knowledge base on systematic selection and implementation of programs that promote educational equity and accountability.

Experience with successful implementation of innovative approaches to instructional accommodation in the 1980s has demonstrated the possibility of achieving the vision of equity in educational outcomes in the 1990s. A central consideration is how to tie together resources (e.g., teacher expertise, curricular accommodations, and administrative and organizational support for program implementation) and outcomes in ways that simultaneously achieve equity goals and accountability. Achieving educational equity will require using the best of what we currently know about how to design and maintain educationally powerful school learning environments that provide coordinated and inclusive comprehensive services to meet the diverse needs of all of the students today's schools are challenged to serve. School improvement efforts for the 1990s must address the concerns of systematically utilizing school resources and facilitating the development of students who have the most difficulty, while providing *all* students with the best possible opportunities to succeed in learning.

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Appendix

Master List of Variables and Definitions

Variables important to learning: A consensus from the field.

Variables	Number of effective practices (rated as important) in each variable category
Category I: State and district variables	
A. District level demographics and marker variables	3
B. State level policy variables	3
Category II: Out of school contextual variables	
A. Community variables	3
B. Peer group variables	5
C. Home environment and parental support variables	9
D. Student use of out of school time variables	3
Category III: School level variables	
A. Demographic and marker variables	3
B. Teacher/administrator decision-making variables	6
C. School culture variables (ethos conducive to teaching and learning)	8
D. Schoolwide policy and organizational variables	11
E. Accessibility variables	1
F. Parental involvement policy variables	2
Category IV: Student variables	
A. Demographic and marker variables	4
B. History of educational placements	3
C. Social and behavioral variables	5
D. Motivational and affective variables	9
E. Cognitive variables	12
F. Metacognitive variables	4
G. Psychomotor variables	1
Category V: Program design variables	
A. Demographic and marker variables	4
B. Curriculum and instructional variables	15
C. Curriculum design variables	13
Category VI: Implementation, classroom instruction and climate variables	
A. Classroom implementation support variables	4
B. Classroom instructional variables	26
C. Quantity of instruction variables	11
D. Classroom assessment variables	4
E. Classroom management variables	5
F. Student and teacher interactions: social variables	6
G. Student and teacher interactions: academic variables	5
H. Classroom climate variables	15

A summary of findings from a survey of consensus from the field.

Variables	Consensus rating
Category I: State and district variables	
These are variables associated with state and district level school governance and administration. They include state curriculum and textbook policies, testing and graduation requirements, and teacher licensure; as well as specific provisions in teacher contracts, and some district-level administrative and fiscal variables.	
I–A. District level demographics and marker variables	
1. School district size	
2. Degree of school district bureaucratization	
3. Degree of school district centralization	
4. Presence of contractual limits on after-school meetings	
5. Limits on class size	
6. Presence of contractual restrictions on activities performed by aides	
7. Degree of central office assistance and support for programs	•
8. Degree of board of education support for instructional programs	•
9. Per pupil expenditure	•
10. Efficiency of transportation system	
I–B. State level policy variables	
1. Teacher licensure requirements	•
2. Degree of state control over textbooks	
3. Degree of state control over curriculum	
4. Academic course and unit requirements	•
5. Minimum competency test requirements	
6. Adherence to least restrictive environment/mainstreaming	•
Category II: Out of school contextual variables	
These are variables associated with the home and community contexts within which schools function. They include community demographics, peer culture, parental support and involvement, and amount of time students spend out of school on such activities as television viewing, leisure reading, and homework.	
II–A. Community variables	
1. Socioeconomic level of community	••
2. Ethnic mix of community	•
3. Quality of social services for students	•
II–B. Peer group variables	
1. Level of peers' academic aspirations	••
2. Level of peers' occupational aspirations	••
3. Presence of well-defined clique structure	•
4. Degree of peers' substance abuse	••
5. Degree of peers' criminal activity	••
II–C. Home environment and parental support variables	
1. Educational environment (e.g., number of books and magazines at home)	••
2. Parental involvement in assuring completion of homework	••

(Continued)

Variables	Consensus rating
3. Parental involvement in assuring regular school attendance	••
4. Parental monitoring of student television viewing	••
5. Parental participation in school conferences and related activities	•
6. Parental application of appropriate, consistent discipline	••
7. Parental expression of attention to children	••
8. Parental interest in student's school work	••
9. Parental expectation for academic success	••
II–D. Student use of out of school time variables	
1. Student participation in clubs and extracurricular school activities	
2. Amount of time spent on homework	•
3. Amount of time spent on leisure reading	•
4. Amount of time spent viewing educational television	
5. Amount of time spent viewing noneducational television	•
Category III: School level variables	
These are variables associated with school-level demographics, culture, climate, policies, and practices. They include demographics of the student body, whether the school is public or private, levels of funding for specific categorical programs, school-level decision making variables, and specific school-level policies and practices, including policies on parental involvement in the school.	
III–A. Demographic and marker variables	
1. Public versus private school	
2. Size of school	
3. Level of Chapter 1 (compensatory education) funding	•
4. Level of Title VII (bilingual) funding	
5. Level of PL 94–142 (handicapped) funding	•
6. Mix of socioeconomic levels in the school	•
7. Mix of cultural/ethnic groups in the school	
8. Mix of student language backgrounds in the school	
III–B. Teacher/administrator decision making variables	
1. Teacher and administrator consensus on school values, norms, and roles	••
2. Principal actively concerned with instructional program	••
3. Teacher involvement in curricular decision making	••
4. Teacher involvement in instructional decision making	••
5. Teacher involvement in resource allocation decisions	•
6. Teacher involvement in finding ways to increase academic performance	••
III–C. School culture variables (ethos conducive to teaching and learning)	
1. Use of cooperative, not exclusively competitive, goal structures	•
2. Schoolwide emphasis on and recognition of academic achievement	••
3. Low staff absenteeism	•
4. Low staff turnover	•
5. Low staff alienation	••
6. Active collaboration between regular classroom teachers and special education teachers	••
7. Safe, orderly school climate	••
8. Degree of school personnel professional collaboration	••

Variables	Consensus rating
III–D. Schoolwide policy and organizational variables	
1. Presence of "effective schools program"	•
2. Explicit school grading and academic progress policies	•
3. Explicit schoolwide discipline policy	•
4. Explicit schoolwide attendance policy	•
5. Coordination of pullout programs for handicapped students with regular instructional programs	•
6. Use of multi-age grouping	
7. Use of instructional teaming	•
8. Use of cross-age tutoring	•
9. Use of peer tutoring	•
10. Use of academic tracking for specific school subject areas	•
11. Minimization of external classroom disruptions (e.g., broadcast announcements)	
12. Adherence to least restrictive environment/mainstreaming	•
13. Minimum use of suspension and expulsion as discipline tools	•
III–E. Accessibility variables	
1. Accessibility of educational program (overcoming architectural, communication, and environmental barriers	•
III–F. Parental involvement policy variables	
1. Parental involvement in improvement and operation of instructional programs	•
2. School-sponsored parenting skills workshops (e.g., behavior modification, parent effectiveness training)	•
Category IV: Student variables	
These are variables associated with individual students themselves, including demographics, academic history, and a variety of social, behavioral, motivational, cognitive, and affective characteristics.	
IV–A. Demographic and marker variables	
1. Chronological age	
2. Socioeconomic status	•
3. Gender	
4. Ethnicity	
5. First or native language	•
6. Physical and health status	•
7. Special education classifications (e.g., EMR, LD)	•
IV–B. History of educational placements	
1. Prior grade retentions	•
2. Prior special placements	•
3. Current placement in regular class versus self-contained special education class	•
IV–C. Social and behavorial variables	
1. Positive, nondisruptive behavior	••
2. Appropriate activity level	••
3. Cooperativeness with teacher	••
4. Cooperativeness with peers	••
5. Ability to make friends with peers	•

(Continued)

Variables	Consensus rating
IV-D. Motivational and affective variables	
1. Attitude toward school	••
2. Attitude toward teachers	••
3. Attitude toward subject matter instructed	••
4. Motivation for continual learning	••
5. Independence as a learner	••
6. Perseverance on learning tasks	••
7. Self-confidence	••
8. Academic self-competence concept in subject area instructed	••
9. Attributions for success and failure in subject area instructed	••
IV-E. Cognitive variables	
1. Piagetian stage of cognitive development	•
2. Level of reasoning (fluid ability)	••
3. Level of spatial ability	•
4. Memory	••
5. Level of general academic (crystallized) knowledge	••
6. Level of specific academic knowledge in subject area instructed	•
7. Level of reading comprehension ability	••
8. Level of writing ability	•
9. Level of computational ability	•
10. Level of oral fluency	•
11. Level of listening skills	••
12. Learning styles (e.g., field independent, visual/auditory learners, high cognitive complexity)	•
IV-F. Metacognitive variables	
1. Self-regulatory, self-control strategies (e.g., control of attention)	••
2. Comprehension monitoring (planning; monitoring effectiveness of attempted actions; monitoring outcomes of actions; testing, revising, and evaluating learning strategies)	••
3. Positive strategies for coping with failure	••
4. Positive strategies to facilitate generalization of concepts	••
IV-G. Psychomotor variables	
1. Psychomotor skills specific to area instructed	•
Category V: Program design variables	
These are variables associated with instruction as designed, and with the physical arrangements for its delivery. They include the instructional strategies specified by the curriculum, and characteristics of instructional materials.	
V-A. Demographic and marker variables	
1. Size of instructional group (whole-class, small-group, one-on-one instruction)	••
2. Proportion of students with special needs served in regular classes	•
3. Number of classroom aides required	•
4. Resources needed	•

Variables	Consensus rating
V–B. Curriculum and instructional variables	
1. Clearly presented academic, social, and attitudinal program goals/outcomes	••
2. Use of explicit goal/objective setting for instruction of individual student (e.g., individualized educational plans, IEPs)	•
3. Use of mastery learning techniques, including use of instructional cues, engagement, and corrective feedback	••
4. Use of cooperative learning strategies	•
5. Use of personalized instructional program	•
6. Use of prescriptive instruction combined with aspects of informal or open education	•
7. Use of diagnostic-prescriptive methods	•
8. Use of computer-assisted instruction	•
9. Use of crisis management techniques to control classroom disruptiveness	•
10. Use of program strategies for favorable affective climate	•
11. Alignment among goals, contents, instruction, assignments and evaluation	••
12. Curriculum units integrated around key discipline-based concepts	•
13. Use of multidisciplinary approaches to instructional planning (including diagnosis in educational planning)	•
14. Presence of information in the curriculum on individual differences and commonalities (including handicapping conditions)	•
15. Presence of culturally diverse materials in the curriculum	•
V–C. Curriculum Design Variables	
1. Materials employ alternative modes of representation	•
2. Material is presented in a cognitively efficient manner	••
3. Materials employ explicit and specific objectives	••
4. Materials employ advance organizers	•
5. Materials employ learning hierarchies	•
6. Materials are tied to assessment and diagnostic tests	•
7. Availability of materials and activities prepared specifically for use with whole classroom, small groups, or one-on-one instruction	•
8. Degree of structure in curriculum accommodates needs of different learners	••
9. Student interests guide selection of a significant portion of content	•
10. Availability of materials and activities for students with different abilities	••
11. Availability of materials and activities for students with different learning styles	••
12. Developmental issues considered	•
13. Student experiences considered	•
Category VI: Implementation, classroom instruction, and climate variables	
These are variables associated with the implementation of the curriculum and the instructional program. They include classroom routines and practices, characteristics of instruction as delivered, classroom	

(Continued)

Variables	Consensus rating
management, monitoring of student progress, and quality and quantity of instruction provided, as well as student–teacher interactions and classroom climate.	
VI–A. Classroom implementation support variables	
1. Creation and maintenance of necessary instructional materials	•
2. Adequacy in the configuration of classroom space	•
3. Availability of classroom aides	•
4. Use of written records to monitor student progress	
5. Establishing efficient classroom routines and communicating rules and procedures	
6. Developing student self-responsibility for independent study and planning of one's own learning activities	••
VI–B. Classroom instructional variables	
1. Prescribing individualized instruction based on perceived match of type of learning tasks to student characteristics (e.g., ability, learning style)	•
2. Use of procedures requiring rehearsal and elaboration of new concepts	•
3. Use of clear and organized direct instruction	••
4. Systematic sequencing of instructional events and activities	••
5. Explicit reliance on individualized educational plans (IEPs) in planning day-to-day instruction for individual students	•
6. Use of instruction to surface and confront student misconceptions	•
7. Use of advance organizers, overviews, and reviews of objectives to structure information	•
8. Clear signaling of transitions as the lesson progresses	•
9. Significant redundancy in presentation of content	•
10. Teacher conveys enthusiasm about the content	••
11. Directing students' attention to the content	••
12. Using reinforcement contingencies	••
13. Setting and maintaining clear expectations of content mastery	••
14. Providing frequent feedback to students about their performance	••
15. Explicitly promoting effective metacognitive learning strategies	•
16. Promoting learning through student collaboration (e.g., peer tutoring, group work)	•
17. Corrective feedback in event of student error	••
18. Flexible grouping that enables students to work to improve and change status/groups	••
19. Teaching for meaningful understanding	••
20. Degree to which student inquiry is fostered	••
21. Scaffolding and gradual transfer of responsibility from teacher to student	•
22. Degree to which assessment is linked with instruction	•
23. Skills taught within the context of meaningful application	••
24. Good examples and analogies to concretize the abstract and familiarize the storage	••
25. Consideration of the teacher's use of language in the instructional process	••
26. Explicitly promoting student self-monitoring of comprehension	••

Variables	Consensus rating
VI-C. Quantity of instruction variables	
1. Length of school year	
2. Length of school day	•
3. Time on task (amount of time students are actively engaged in learning)	••
4. Time spent in direct instruction on basic skills in reading	••
5. Time spent in direct instruction on basic skills in mathematics	••
6. Time allocated to basic skills instruction by regular classroom teacher	••
7. Time allocated to basic skills instruction by special education teacher	••
8. Difference between academic learning time and allocated learning time	•
9. Time spent out of school on homework	•
10. Time spent out of school viewing educational television	•
11. Time spent out of school in informal learning experiences (e.g., museum trips, scouts)	•
12. Nature of regular classroom content missed by students during participation in pullout programs	•
VI-D. Classroom assessment variables	
1. Use of assessments to create detailed learner profiles rather than simple classifications or unlaborated total scores	•
2. Use of assessment as a frequent, integral component of instruction	•
3. Accurate, frequent measurement of basic skills in reading	•
4. Accurate, frequent measurement of basic skills in mathematics	•
VI-E. Classroom management variables	
1. Minimal disruptiveness in classroom (e.g., no excessive noise, no students out of place during instructional activities, no destructive activities)	••
2. Group alerting (teaching uses questioning/recitation strategies that maintain active participation by all students)	••
3. Learner accountability (teacher maintains student awareness of learning goals and expectations)	••
4. Transitions (teacher avoids disruptions of learning activities, brings activities to a clear and natural close, and smoothly initiates new activity)	••
5. Teacher "withitness" (teacher is continually aware of events and activities and minimizes disruptiveness by timely and nonconfrontational actions)	••
VI-F. Student and teacher interactions: social variables	
1. Student initiates positive verbal interactions with other students and with teacher	•
2. Student responds positively to questions from other students and from teacher	••
3. Teacher reacts appropriately to correct and incorrect answers	••
4. Teacher reinforces positive social interactions with students rejected by peers	••
5. Teacher provides explicit coaching on appropriate social behaviors	••
6. Teacher provides explicit coaching to reduce aggression	••

(Continued)

Variables	Consensus rating
VI–G. Student and teacher interactions: academic variables	
1. Teacher asks academic questions frequently	••
2. Teacher asks questions predominantly low in difficulty	•
3. Teacher asks questions that are predominantly low in cognitive level	•
4. Teacher maintains high post-question wait time	•
5. Frequent calls for extended, substantive oral and written response (not one-word answers)	•
VI–H. Classroom climate variables	
1. Cohesiveness (members of class are friends sharing common interests and values and emphasizing cooperative goals)	•
2. Low friction (students and teacher interact in a considerate and cooperative way, with minimal abrasiveness)	••
3. Low cliqueness (students work with many different classmates, and not just with a few close friends)	•
4. Satisfaction (students are satisfied with class activities)	••
5. Speed (the pacing of instruction is appropriate for the majority of the students)	••
6. Task difficulty (students are continually and appropriately challenged)	••
7. Low apathy (class members are concerned and interested in what goes on in the class)	••
8. Low favoritism (all students are treated equally well in the class, and given equal opportunities to participate)	••
9. Formality (students are asked to follow explicitly stated rules concerning classroom conduct and activities)	•
10. Goal direction (objectives of learning activities are specific and explicit)	••
11. Democracy (all students are explicitly involved in making some types of classroom decisions)	•
12. Organization (class is well organized and well planned)	••
13. Diversity (the class divides its efforts among several different purposes)	•
14. Environment (needed or desired books and equipment are readily available to students in the classroom)	••
15. Competition (students compete to see who can do the best work)	•

Note: •• = highly important (mean rating of 2.6 and above, based on a 3-point scale).
• = moderately important (mean rating of 2.0–2.5, based on a 3-point scale).

TEMPLE UNIVERSITY CENTER FOR RESEARCH IN HUMAN DEVELOPMENT AND EDUCATION

The Temple University Center for Research in Human Development and Education is an interdisciplinary center for the study of emerging problems and challenges facing children, youth, and families. Its overall goal is to investigate the basic forces that affect human development as well as educational processes and outcomes. An important focus of the Center's work is the identification and shaping of effective responses to these forces through far-reaching changes in institutional policies and practices.

The problems and challenges facing children, youth, and families stem from a variety of cultural, economic, political, and health pressures. Their solutions are, by nature, complex. They require long-term programs of study that apply knowledge and expertise from many disciplines and professions. To this end, the Center draws together the many resources of the University and a wide range of national, state, and regional programs. The result is interdisciplinary and interdepartmental collaborations that involve investigations of social, economic, educational, and developmental factors and demonstration of state-of-the-art models for training and for delivery of relevant services. Research and development projects in these areas reflect a commitment to enhance the knowledge base for improving the quality of life for children and families, particularly in urban environments.

The work of the Center for Research in Human Development and Education is divided into four program units: Improving Instruction and Learning in Schools, which provides technical assistance and training for innovative school programs; Social Service Delivery Systems, which develops models for effective social service delivery; Studies of Child Development and Early Intervention, which conducts pre-school diagnosis and produces innovative program development; and the National Center on Education in the Inner Cities (CEIC), funded by the U.S. Department of Education's Office of Educational Research and Improvement, which has undertaken a program of research and development as well as dissemination that takes bold steps to mobilize and strengthen education and related resources to foster resilience and learning success of children, youth, and their families in inner cities.

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